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**UNIVERSITI KUALA LUMPUR
MALAYSIA ITALY DESIGN INSTITUTE**

**FINAL EXAMINATION
MARCH 2026 SEMESTER**

COURSE CODE	: PWD 20303
COURSE NAME	: RAILWAY TRACK ENGINEERING
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	: DIPLOMA OF ENGINEERING TECHNOLOGY IN RAILWAY SYSTEM
DATE	: 25 JUNE 2026
TIME	: 09.00 AM – 11.30 AM
DURATION	: 2 HOURS 30 MINS

INSTRUCTIONS TO CANDIDATES

1. Please **CAREFULLY** read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **TWO (2)** sections; **Section A** and **Section B**.
4. Answer **ALL** questions in **Section A** and **Section B**.
5. Please write your answers on the answer booklet provided.
6. Answer all questions in English language **ONLY**.

SECTION A (Total: 60 Marks)**INSTRUCTION: Answer 2 questions.****Please use the answer booklet provided.****QUESTION 1**

Proper geometric design of tracks is crucial to ensure the safe and efficient operation of trains at their highest allowed speeds, while accommodating heavy axle loads.

- (a) Describe the importance and components in track design. (10 Marks)
- (b) Explain the function of running rail with head, web, and foot sections. (10 Marks)
- (c) Describe the importance of track geometry design (5 Marks)
- (d) Describe the importance of the track gauge and list down the two track gauges used in Malaysia (5 Marks)
- (e) The primary objective of railways extends beyond the reduction of travel duration, it also encompasses ensuring safety by selecting the track gradient for geometric design and superelevation, which are crucial factors. Please provide a discussion on the following topic using your own words:
- Curve
 - Turnout / Crossin
 - Superelevation or cant superelevation
 - Gradient in station yard
- (10 Marks)

QUESTION 2

The railway track support system, also known as the track structure or track bed, is a critical component of railway infrastructure. With the growing demand for passenger and freight transportation, railway systems have become increasingly essential in transportation networks. The track support system plays a crucial role in ensuring safety, efficiency, durability, and cost-effectiveness.

(a) Explain what a Permanent Way

(10 Marks)

(b) Explain function of the rail section and running rail used in Malaysia's railway system

(10 Marks)

SECTION B (Total: 40 Marks)

INSTRUCTION: Answer 2 questions.

Please use the answer booklet provided.

QUESTION 1

The turnout railway system are important elements in railway track structure. A proper understanding of turnout components, functions, and maintenance is essential to ensure safe and efficient railway operations.

- (a) Explain the function and importance of a railway turnout system in railway track operations.
(10 Marks)
- (b) Describe the main components of a railway turnout and explain the function of each component.
(5 Marks)
- (c) Identify FIVE (5) railway hand tools commonly used during track maintenance work and state the function of each tool.
(5 Marks)
- (d) Explain the importance of regular inspection and maintenance of turnout systems in ensuring railway safety and operational efficiency.
(5 Marks)

QUESTION 2

The risk in the railway industry is elevated due to the proximity of workers and passengers to tracks, trains and electrical equipment, making it one of the most hazardous areas. Implementing safety measures, providing proper training, and raising awareness can significantly mitigate this risk.

- (a) List FIVE (5) safety features/safety equipment that you know at railway and explain their function.

(5 Marks)

- (b) Discuss the importance of complying with railway safety rules and procedures during railway operations and maintenance activities. In your discussion, explain how failure to follow safety procedures may affect railway workers, passengers, and railway operations.

(10 Marks)

END OF EXAMINATION PAPER